

Claims

We claim:

1 1. A fuel depot for autonomously and clandestinely providing fuel to
2 ships and craft comprising:

3 an elongate streamlined flexible bladder member having flexible
4 hull walls and divider walls forming compartments for containing fuel,
5 said compartments each having a fuel valve and fuel pump, said hull
6 walls and said divider walls being separated by uniform spaces, said
7 bladder member having a controllable buoyancy permitting surface and
8 submerged transit to a remote destination;

9 a fuel and water tight composition in communication with said
10 hull walls and divider walls along said spaces for preventing fuel
11 leaks to ambient water and fuel and water leaks between said
12 compartments;

13 a submersible propulsion system connected by towing lines to said
14 bladder member for towing said bladder member to said remote
15 destination; and

16 a command/control system on said submersible propulsion system
17 for coupling driving signals to said propulsion system to tow and
18 steer said flexible bladder member to said remote destination, said
19 command/control system having a preprogrammed computer, an inertial
20 navigation system (INS), a global positioning system (GPS), and RF
21 transceiver to generate said driving signals.

1 2. The fuel depot of claim 1 further comprising:

2 spaced-apart flexible links having their opposite ends connected

Navy Case No. 95825

to said hull walls and divider walls to create said spaces; and
pressurized gas fed to said spaces to distend and make them of
uniform thickness.

3. The fuel depot of claim 2 further comprising:

negative ballast at the bottom of each compartment of said
bladder member to help maintain upright orientation and assure
reliable water-free delivery of said fuel through each fuel valve and
fuel pump.

4. The fuel depot of claim 3 further comprising:

a ballasting valve and small compressed air tank at the bottom of
each compartment for controlling buoyancy and ballasting of said
bladder member, each ballasting valve selectively venting in some of
said ambient water and each air tank selectively blowing vented water
from each compartment with pressurized air.

5. The fuel depot of claim 4 wherein said selective venting and
blowing provided said propulsion system and bladder member buoyancy
control to submerge said bladder member to a level that is at and
below the surface of said water and be visibly undetectable for
clandestine transit to said remote destination.

6. The fuel depot of claim 5 further comprising:

a flexible septum in each compartment over each ballasting valve
and air tank to form a flexible ballasting chamber in each compartment

4 to separate fuel and vented water therein.

1
1 7. The fuel depot of claim 6 further comprising:

2 an identification friend foe IFF unit for receiving interrogating
3 energy from a ship and responding the location of said fuel depot.

1 8. The method of autonomously and clandestinely providing fuel to
2 ships and craft comprising the steps:

3 providing an elongate streamlined flexible bladder member having
4 flexible hull walls and divider walls forming compartments for
5 containing fuel, said compartments each having a fuel valve and fuel
6 pump, said hull walls and said divider walls being separated by
7 uniform spaces;

8 providing buoyancy control of said bladder member to permit
9 submerged transit to a remote destination;

10 applying a fuel and water tight composition in communication with
11 said hull walls and divider walls along said spaces;

12 preventing fuel leaks to ambient water and fuel and water leaks
13 between said compartments by said composition;

14 connecting a submersible propulsion system by towing lines to
15 said bladder member;

16 towing said bladder member submerged by said propulsion system to
17 said remote destination;

18 coupling driving signals from a command/control system on said
19 submersible propulsion system to said propulsion system, said
20 command/control system having a preprogrammed computer, an inertial

Navy Case No. 95825

1 navigation system (INS), a global positioning system (GPS), and RF
2 transceiver to generate said driving signals; and
3 steering said flexible bladder member to said remote destination
4 by said propulsion system receiving said driving signals from said
5 command/control system.

1 9. The method of claim 8 further comprising the steps of:

2 connecting opposite ends of flexible links to said hull walls and
3 divider walls to create spaces between said walls; and
4 feeding pressurized gas fed to said spaces to distend and make
5 them of uniform thickness.

1

1 10 The method of claim 9 further comprising the step of:

2 locating negative ballast at the bottom of each compartment of
3 said bladder member to help maintain upright orientation and assure
4 reliable water-free delivery of said fuel through each fuel valve and
5 fuel pump.

1

1 11. The method of claim 10 further comprising the steps of:

2 selectively adding water ballast to said bladder member via a
3 ballasting valve and small compressed air tank at the bottom of each
4 compartment; and

5 controlling buoyancy and ballasting of said bladder member by
6 each ballasting valve selectively venting in some of said ambient
7 water and each air tank selectively blowing vented water from each
8 compartment with pressurized air from each air tank.

Navy Case No. 95806

1 12. The method of claim 11 wherein said selective venting and blowing
2 provide said propulsion system and bladder member buoyancy control to
3 submerge said bladder member to a level that is at and below the
4 surface of said water and be visibly undetectable for clandestine
5 transit to said remote destination.

1
1 13. The method of claim 12 further comprising the step of:
2 separating water and fuel in each compartment by a flexible
3 septum in each compartment over each ballasting valve and air tank to
4 form a flexible ballasting chamber in each compartment.

1 14. The method of claim 13 further comprising the steps of:
2 incorporating an identification friend foe IFF unit on said
3 bladder member;
4 receiving interrogating energy from an interrogating ship; and
5 responding the location of said fuel depot to the interrogating
6 ship.

1 15. The method of autonomously and clandestinely providing fuel to
2 ships and craft comprising the steps:
3 providing an elongate streamlined flexible bladder member having
4 flexible hull walls and divider walls forming compartments for
5 containing fuel, said compartments each having a fuel valve and fuel
6 pump, said hull walls and said divider walls being separated by
7 uniform spaces;
8 providing buoyancy control of said bladder member to permit

Navy Case No. 95825

1 surface transit to a remote destination;

2 applying a fuel and water tight composition in communication with
3 said hull walls and divider walls along said spaces;

4 preventing fuel leaks to ambient water and fuel and water leaks
5 between said compartments by said composition;

6 connecting a surface propulsion system by towing lines to said
7 bladder member;

8 towing said bladder member on the surface by said propulsion
9 system to said remote destination;

10 coupling driving signals from a command/control system on said
11 submersible propulsion system to said propulsion system, said
12 command/control system having a preprogrammed computer, an inertial
13 navigation system (INS), a global positioning system (GPS), and RF
14 transceiver to generate said driving signals; and

15 steering said flexible bladder member to said remote destination
16 by said propulsion system receiving said driving signals from said
17 command/control system.

1 16. The method of claim 15 further comprising the steps of:

2 connecting opposite ends of flexible links to said hull walls and
3 divider walls to create spaces between said walls; and

4 feeding pressurized gas fed to said spaces to distend and make
5 them of uniform thickness.

1 17 The method of claim 16 further comprising the step of:

2 locating negative ballast at the bottom of each compartment of

Navy Case No. 95825

3 said bladder member to help maintain upright orientation and assure
4 reliable water-free delivery of said fuel through each fuel valve and
5 fuel pump.

1 18. The method of claim 17 further comprising the steps of:

2 selectively adding water ballast to said bladder member via a
3 ballasting valve and small compressed air tank at the bottom of each
4 compartment; and

5 controlling buoyancy and ballasting of said bladder member by
6 each ballasting valve selectively venting in some of said ambient
7 water and each air tank selectively blowing vented water from each
8 compartment with pressurized air from each air tank.

1 19. The method of claim 18 wherein said selective venting and blowing
2 provide said propulsion system and bladder member buoyancy control to
3 submerge said bladder member to a level that is at and below the
4 surface of said water and be visibly undetectable for clandestine
5 transit to said remote destination.

1 20. The method of claim 19 further comprising the step of:

2 separating water and fuel in each compartment by a flexible
3 septum in each compartment over each ballasting valve and air tank to
4 form a flexible ballasting chamber in each compartment.